TELEDYNE LECROY
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Summit T28
PCI Express Protocol Analyzer
Quick Start

1 Introduction

The compact Summit T28 Protocol Analyzer features a small form factor supporting PCI Express data transmission rates up to 5 GT/s and data lane widths up to x8 with 2GB trace buffer in a single unit. The Summit T28 protocol analyzer can support multiple PCIe storage protocols such as SATA Express, NVM Express and SCSI Express.

Use this document for quick installation and setup.

If you experience problems or need more information, see the *Summit T28 User Manual* on the Installation DVD or at the Teledyne LeCroy web site.

2 Components

The analyzer package includes the following components:

- Summit T28 analyzer system
- DC Power Adaptor, 12 volts, and AC power cable
- USB cable
- PCIe Protocol Suite Software program DVD-ROM
- Quick Start Guide (this document)

Depending on configuration, the package may also include:

- One probe cable for x8 recording
- Slot interposer
- MidBus Probe kit

Please see the *Summit T28 User Manual* on the installation DVD for component specifications and further details.

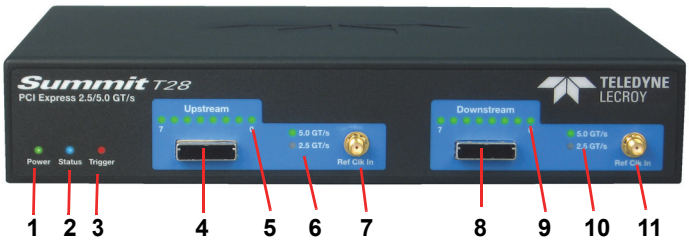
Summit T28 Protocol Analyzer

3 Unpacking the Analyzer

Inspect the received shipping container for any damage. Unpack the container and account for each of the system components listed on the accompanying packing list. Visually inspect each component for absence of damage.

In the event of damage, notify the shipper and Teledyne LeCroy. Retain all shipping materials for shipper's inspection.

4 Front Panel Description



The Analyzer has the following features on the front:

[1] Power LED: Lights when power is On.

[2] Status LED: Displays the connection status of the link.

- Red - Error condition. Try using the PCIe Protocol Suite application to clear the error. Please contact the factory if this does not work.
- Green - Configuring system.
- Purple - Waiting for connection.
- Blue - Unit ready/connected.

[3] Trigger LED: Lights when Summit T28 triggers on an event.

[4] Upstream [7:0] connector: Connection to the probe for the capture of upstream direction of the link.

[5] Upstream [7:0] Lane Activity LEDs: Indication per lane of activity. Off during electrical idle, orange for lane active but errors detected, green for normal operation.

[6] Speed LEDs: Indicates current speed the analyzer is using for the Upstream direction.

[7] Ref Clk In (Reference Clock In): Provides an optional alternative connection from an external reference clock source to the Summit T28 analyzer.
Note: In standard configuration, the Summit T28 analyzer uses the reference clock from a probe cable from the interposer.

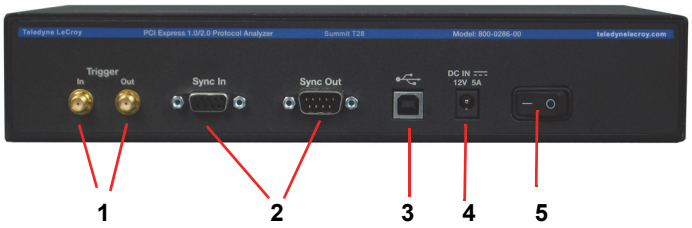
[8] Downstream [7:0] connector: Connection to the probe for the capture of downstream direction of the link.

[9] Downstream [7:0] Lane Activity LEDS: Indication per lane of activity. Off during electrical idle, orange for lane active but errors detected, green for normal operation.

[10] Speed LEDs: Indicates current speed the analyzer is using for the Downstream direction.

[11] Ref Clk In (Reference Clock In): See [7] above.

Rear Panel Description



[1] Trigger In and Out: Provide external trigger capabilities. You can configure Summit T28 to trigger external equipment using Trigger Out. You can use Trigger In to trigger the Analyzer from another device.

[2] Sync In and Sync Out: Allows multiple Teledyne LeCroy analyzers to send synchronization and control messages to one another.

[3] USB Type B Host Machine Connector: To connect the Analyzer to the host machine using a USB connection.

[4] DC IN: 12 V, 5 A

[5] Power Switch (black): 1 = On and 0 = Off.

Warning! Do not open the enclosure. No operator serviceable parts are inside.

5 Interposers and Probes

The Summit T28 supports a full range of Teledyne LeCroy PCIe Interposers and Probes,

Gen2 MidBus Probe: The Gen2 MidBus Probe is designed for use with the Summit T28 Analyzer and supports lane widths from x1 to x8 at data rates of 2.5 GT/s (Gen1) or 5.0 GT/s (Gen2).

Gen2 Multi-lead Probe: The Summit Multi-lead Probe is designed for use with the Summit T28 Analyzer. The probe consists of 1 to 4 probe pods, which are connected to the analyzer using either iPass Y-Cables (for x1 and x4) or straight x4-to-x8 iPass cables (for x8). Each probe pod supports up to 8 Flex Tips, with each Flex Tip connected via two coax cables.

Gen2 Passive Slot Interposer: The Gen2 Passive Slot Interposer is designed for use with the Summit T28 Analyzer and supports lane widths from x1 to x8 at data rates of 2.5 GT/s (Gen1) or 5.0 GT/s (Gen2). For lane widths up to x8, one iPass Y-cable is required.

Gen2 Active Slot Interposer: The Gen2 Active Slot Interposer is designed for use with the Summit T28 Analyzer and supports lane widths from x1 to x8 at data rates of 2.5 GT/s (Gen1) or 5.0 GT/s (Gen2). For lane widths up to x8, one iPass Y-cable is required.

Warning! Interposer has static-sensitive components.
Handle only at static-safe work stations.

6 Installing the Software

The PCIe Protocol Suite software operates all of Teledyne LeCroy's PCI Express Protocol Analyzer and Exerciser products and should be installed on a Microsoft® Windows®-based host machine. You need to install the PCIe Protocol Suite software on the host machine before attaching the Analyzer to the system.

The minimum requirements for the host machine are:

- Windows 8 (x86 and x64), Windows Server 2012 (x64), Windows 7 (x86 and x64), Windows Server 2008R2 (x64), Windows XP (x86).
- The latest Service Pack available for the Windows OS in use is required.
- It is recommended that you use one of the supported 64-bit Windows versions listed above as they allow using more RAM than the 32-bit ones.
- Processor with clock speed of 1 GHz or higher
- This software application may use up to 4GB of the RAM in the host machine. For improved performance of the software, it is recommended that 16GB of RAM is installed on the host machine. Memory as little as 2GB would still allow the software to function, but would limit its performance and user experience.
- Storage space of 1GB is required for installing the PCIe Protocol Suite software on the host machine.
- Additional storage space is needed for the operation of the software application and for storing recorded data in files.
- Please remember that storing large captured traces can result in multiple gigabytes of file sizes and can quickly fill your available storage space.
- To take full advantage of the rich visualization and analysis of Teledyne LeCroy software it is recommended that the display is set to at least 1050 lines of vertical resolution with at least 24-bit color depth.
- Display with resolution of at least 1024 x 768, with 16-bit color
- It is recommended that a Gigabit (1000Mbps) Ethernet or a USB3.0 link is used for the connection with the Summit analyzers.
- At minimum the host machine should have either a 100/1000Mbps Ethernet connection to the network or a USB2.0 port.For optimal performance, please refer to our recommended configuration in the product documentation.

In general, the higher the performance of the host machine, the better user experience you get. Please refer to the **Readme** notes and *User Manual* for recommended configurations and additional information. User manuals for your Teledyne LeCroy products can be found in:

Start > All Programs > LeCroy >PCIe Protocol Suite > PCIe Protocol Suite

To install the software, follow the steps below:

Note: You must install the software before connecting the Analyzer to the host machine for the first time.

Refer to the System Requirements in the readme file for information about the exact Windows operating systems supported.

1. Insert the installation disc into the host machine's DVD drive.
2. Typically, the installation process will automatically start. If it doesn't, browse to the 'Autorun' folder on the installation disc, then double-click the 'autorun.exe' file.
3. Follow the on-screen instructions to complete the installation.

Note: If you get an error message during installation of the drivers, consult your system administrator.

Start > All Programs > LeCroy > PCIe Protocol Suite > PCIe Protocol Suite

Software installation can also be downloaded from the Teledyne LeCroy website.

7 Using a USB Connection

To set up the Analyzer using a USB connection:

1. Install PCIe Protocol Suite software on the host machine.
2. Connect the Analyzer to the 12-volt DC Adaptor provided in the box.
3. Connect the USB port to a USB port on the host machine using a USB cable.
4. Turn on the power switch on the back of the Analyzer.

Note: At power-on, the Analyzer initializes and performs a self-diagnostic. If failure occurs, call Teledyne LeCroy Customer Support for assistance.

5. Summit T28 will be recognized by the host machine as a USB device.

   Follow the Microsoft® Windows® on-screen Plug-and-Play instructions for the automatic installation of the Analyzer as a USB device on your analyzing host machine. (The required USB drivers are included on the Installation DVD and were installed on your system when you installed the software.)

   Click **Finish** when you see the message that says "Windows has finished installing the software that your new hardware requires" and the file has been installed in your host machine.

8. Start the PCIe Protocol Suite software, so you can start working with Summit T28.

8 Making Your First Recording

Connect Summit T28 to the system under test using an interposer or probe, and then configure the Recording Options. You can then test the Analyzer by creating a short snapshot recording.

Connect Summit T28 to System under Test using an Interposer or Probe

For a slot interposer, do the following:

1. Insert the slot interposer into a PCI Express slot that you want to monitor.
2. Insert the PCI Express device into the PCIe connector on top of the interposer.
3. Connect Summit T28 to the interposer with Analyzer Y cables. Connect cable Side A to the Upstream port of the Analyzer, and connect cable Side B to the Downstream port.
4. Connect power to the interposer using the provided 12-V power adapter.

For Mid Bus Probe or other types of probes and interposers, please see the *Summit T28 User Manual*.

Configure Recording Options

1. From the **Setup** menu, select **Recording Options**.
2. Select the **General** tab and then choose **Summit T28** as the Analyzer type.
3. In the **Link** section, specify the lane width of the PCI Express link to be analyzed. The rest of the settings in this section can be left at the factory defaults for most PCI Express systems.
4. For multi-lane PCI Express links, the Analyzer needs to observe link training to record link traffic correctly.
5. Click **OK** at the bottom of the Recording Options dialog box to apply the Analyzer recording settings specified.

Start Recording

1. Start a recording session by clicking the **Record** button in the toolbar. Recording is tracked and reported on an activity meter in the status bar.
2. After the recording buffer fills, uploading starts automatically. PCI Express traffic is saved to the hard drive as the file specified in the recording options, and this file is opened in the application for you to view the traffic.

Note: You can interrupt a session by pressing the **Stop** button. If Recording is finished and Upload has started but has not finished, a message box appears. You can:

- Continue uploading.
- Abort the upload and flush the data.
- Abort the upload and preserve all the previously saved data.

9 Environmental Conditions

- Temperature: Operating 32° F to 122° F (0° C to 50° C)
- Temperature: Non-Operating 14° F to 176° F (-10° C to 80° C)
- Humidity: Operating 10% to 90% RH (non-condensing)

Teledyne LeCroy Customer Support

Online Download
Periodically check the Teledyne LeCroy Protocol Solutions Group web site for software updates and other support related to this product. Software updates are available to users with a current Maintenance Agreement.

Mail: 3385 Scott Blvd., Santa Clara, CA 95054-3115
Web: teledynelecroy.com/Support/SoftwareDownload/
E-mail: psgsupport@teledynelecroy.com
Tel: (800) 909-7112 (USA and Canada)
Tel: (408) 653-1260 (worldwide)
Fax: (408) 727-6622 (worldwide)

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Changes

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